A New Aphidophagous Species of a Phycitine Genus *Cryptoblabes* from Japan (Lepidoptera, Pyralidae)[1,2)]

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Synopsis A new pyralid moth, *Cryptoblabes aphidivora,* is described and illustrated from Japan, together with descriptions of the immature stages and notes on its feeding habits on aphids.

In the family Pyralidae, the larvae are not only phytophagous but also entomophagous. The former type ranges from the leaf-eating including leaf-miners to stem-boring, feeding on roots, infesting flowers and seeds, etc. But the latter is very rare in this family and even in the Phycitinae, a subfamily with rather wide range of feeding habit. Up to the present, we have the following records on the phycitine species feeding on other insects. SIMANTON (1916) recorded that the larvae of a Nearctic species, *Laetilia coccidivora* (COMSTOCK), fed on scale insects of the genus *Lacanium*. AYYAR (1929) recorded that *Phycita dentilinella* HAMPSON fed on the pupae of Lepidoptera, and *Euzophera cocciphaga* HAMPSON fed on the eggs and young larvae of a coccid, *Aspidoproctus xyliae*. CLAUSEN (1940) recorded that *Cereobata coccophthora* TURNER was predacious on a coccid, *Eriococcus*. HEINLICH (1956) stated that an adult specimen of *Cryptoblabes gnidiella* (MILLIÈRE) from Malaya preserved in the U. S. National Museum was reported to be reared from a larva predacious on *Aleurocanthus* species (Aleydidae). AVIDOV (1960) mentioned that the larvae of this species in Israel fed on the fruit of orange or grape, which are colonized by the mealybug, *Pseudococcus citriculus* GREEN (Pseudococcidae), and the larvae got honey dew from the scale insect. Moreover this phycitine species has been recorded as a phytophagous pest in Europe, China and America (BEIRN, 1952; WANG, 1980; HEINLICH, 1956). LOPEZ (1930) and RUEDA and CALILUNG (1974) recorded the larvae of *Thialella* sp. as a common predacious enemy of white liaf-louse, *Ceratovacuna* (=*Oregma*) *lanigera* (ZEHNTNER), which had been known as a pest of sugar cane in the Philippines. This species is only the known aphidophagous phycitine.

In October 1981, the junior author found many pyralid larvae feeding on an aphid,

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Pseudoregma bambucicola (TAKAHASHI), at Kaseda City, Kagoshima Prefecture, Kyushu. These larvae constructed silken runways in the large and dense colonies of aphids on the culm of a bamboo (*Bambusa nana* var. *nominalis* MAKINO: Japanese name=Houraichiku). He reared the larvae at the Entomological Laboratory, Kyushu University in Fukuoka. They pupated from the late October to November 1981, and emerged 7–10 days after the pupation. The senior author examined these specimens, including the larvae and pupae, and concluded that this moth is an undescribed species belonging to the genus *Cryptoblabes* in the subfamily Phycitinae.

In this paper, we describe this species as new. This paper also includes the descriptions of its mature larva and pupa, and note on the biology.

Before going further, we wish to express our hearty thanks to Prof. M. SASAKAWA, Assoc. Prof. H. TAKADA, Kyoto Prefectural University, Prof. Y. HIRASHIMA, Prof. T. SAIGUSA, Assoc. Prof. K. MORIMOTO, Assoc. Prof. H. SHIMA, Kyushu University, for their constant guidances and encouragements. Deep thanks also due to Dr. H. INOUE, who kindly sent us the specimens of *Cryptoblabes angustipennella* RAGONOT and reading through the manuscript of this paper. We are very grateful to Mr. M. SHAFFER, Brit. Mus. (Nat. Hist.), for making the comparison of the genitalia of the new species with those of *Cryptoblabes* species preserved in the Museum, and to Dr. S. AOKI, Mr. T. SUNOSE, Hokkaido University, Mr. Sk. YAMANE, Kagoshima University, for giving us the valuable advices.

Cryptoblabes aphidivora YOSHIYASU et ÔHARA, sp. nov.

Adult.

External characters: Head with frons rounded, dark fulvous but fuscous along eye margin. Vertex not prominent, concolorous with frons. Labial palpus long, slender, upturned, outer surface dark fulvous mixed with fuscous; 3rd segment conical, acute at apex. Maxillary palpus rather short, dilated by dark fulvous scales. Proboscis long, basally with scales. Antenna ciliate, about 2/3 the length of forewing; in male two basal segments without any special structure or tuft of scales, flagellum slightly compressed laterally, with fulvous scales dorsally, and short pilose ventrally; female antenna almost as in male but a little shorter. Ocellus distinct, black. Legs short and fulvous, mixed with dark brown scales; anterior surface of legs fuscous except paler distal portion of each tarsomere; tibiae thick; each inner tibial spur about twice as long as outer one.

Wing shape and venation: Wings narrow, venation almost as in the known species of *Cryptoblabes*. Forewing with costal area anterior to vein Sc granulous; termen evenly curved to broadly rounded tornus. Veins Sc to R_2 indistinct towards tips on granulous costal area; R_1 from basal 2/3 of cell; R_2 from near base of common stem of R_3 to R_5 which arises from anterior angle of cell; M_1 from just behind anterior angle of cell, curved; M_2 and M_3 from posterior angle of cell, much approximated each other for basal 1/4; CuA_1 from just proximated with posterior angle of cell; CuA_2 from proximal 5/6 of posterior margin of cell, curved basally; 3A indistinct. Hindwing with apex rather pointed; termen produced near tips of M_2 and CuP. Vein $Sc+R_1$ connated with Rs at base beyond cell; M_2 and M_3 narrowly separated at base;

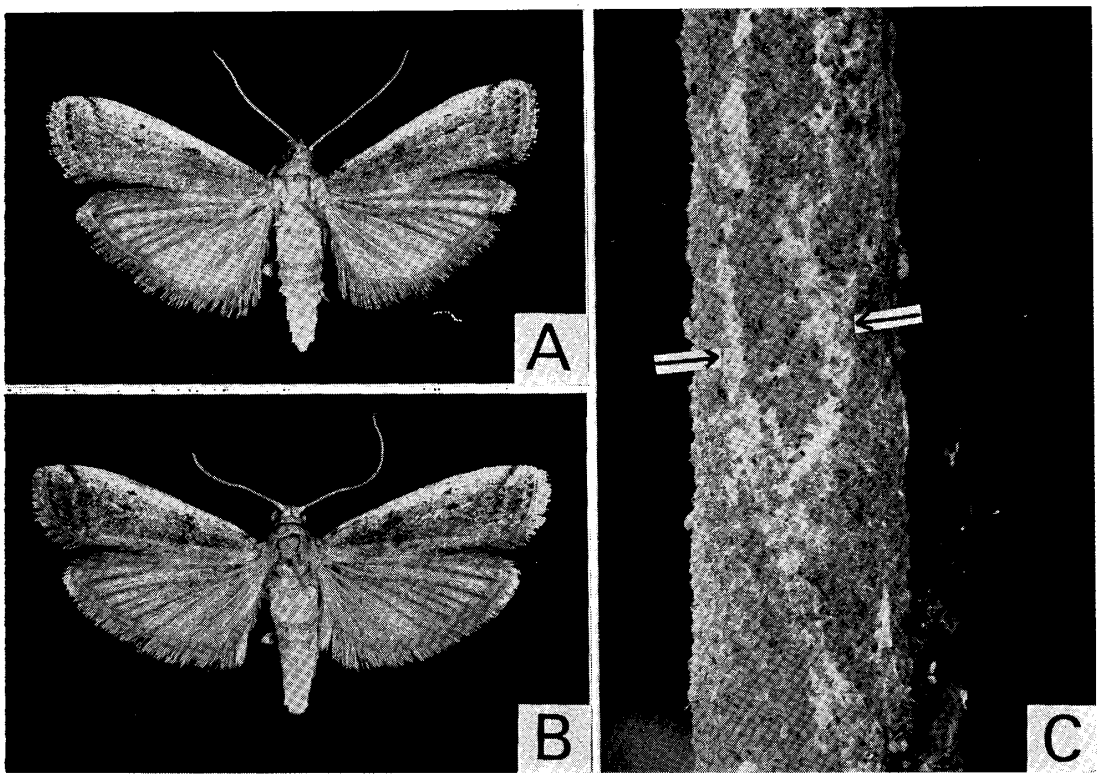

Fig. 1. *Cryptoblabes aphidivora* sp. nov. A: Male (Holotype). B: Female. C: Silken runways of the larvae among the colony of *Pseudoregma bambucicola*.

CuA_2 from 1/2 of posterior margin of cell, straight; CuP, 1A+2A and 3A distinct; cell slightly shorter than 1/2 the length of forewing; discocellulars curved.

Wing marking: Forewing with ground dark fulvous. Costal region naterior to cell suffused with whitish fulvous. Subbasal line obscure, fuscous. Two fuscous spots at the middle of anterior and posterior margins of cell, sometimes continuous, and also two blackish specks present on anterior and posterior angles of cell. Dark postmedial line running parallel with termen from subapical portion of costa to subtornal area, much darker along veins. Postmedial line narrowly pale-bordered outwardly. Marginal line narrow, fuscous, weakly interrupted by tips of veins. Cilia evenly fuscous with narrowly pale base. Hindwing whitish, semilucent, covered with darker scales on each vein and distal 1/2 of costal margin and along termen. Cilia pale fuscous, with a basal pale line and a subbasal dark line along termen.

Male genitalia: Tegumen short, broadly membranous dorsally, continuous with uncus laterally. Vinculum wide, higher than tegumen, with broad lateral flap and an oblong membranous portion midventrally; saccus undeveloped. Uncus short, wide, almost rectangular in dorsal view, apex bilobed, with many stout setae along apical margin and moderate ones along both sides. Gnathos narrow at base, in lateral view curving posteriorly before the middle, and ended in a horn-like, short projection of cochlear, which is continuous with anal plate. Dorsal portion of anellus with a sclerite[3] ("transtilla" sensu HEINLICH), which has a papilate process midventrally.

[3] This sclerite is present on the place corresponding to true transtilla and have a muscle from the tegumen as in the other pyralid species. But it is a free sclerite separated from valvae and in this species the genitalia also have a true transtilla corresponding to valvae.

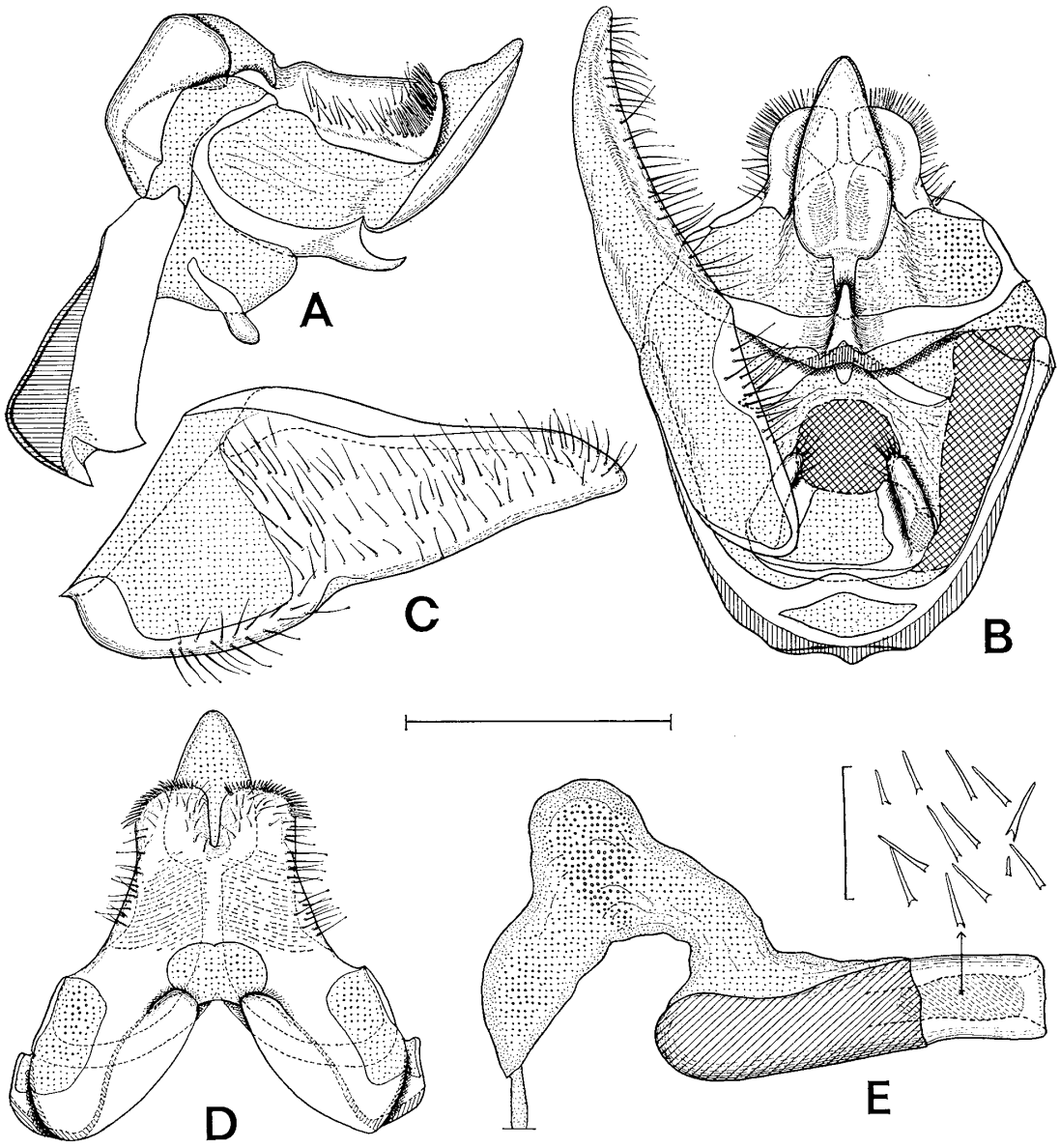

Fig. 2. Male genitalia of *C. aphidivora* sp. nov. A: Lateral view, valvae removed. B: Ventral view, right valva removed. C: Valva, inner view. D: Tegumen and uncus, dorsal view. E: Phallus, lateral view, with vesical spinules (scale, 0.05 mm). Scale: 0.5 mm.

Valva simple, broad basally, evently tapered apically and without projection as in other species of *Cryptoblabes*; transtilla shortly produced from costa; anellifer broad; inner sclerotized wall of valva bearing many setae. Phallus short; coecum penis undeveloped; suprazonal sheath about 1/2 as long as whole length of phallus; vesica with many minute spinules. Juxta of a narrow U-shaped sclerite, with short lateral processes bearing some setae apically.

Female genitalia: Ostium bursae moderate in width, with narrow transverse sclerite on dorsal wall as in the known species of *Cryptoblabes*. Ductus bursae long, slender, membranous. Bursal ring absent. Corpus bursae swollen, evenly membranous; the base with minute scobinate spinules; medial portion with a large signum,

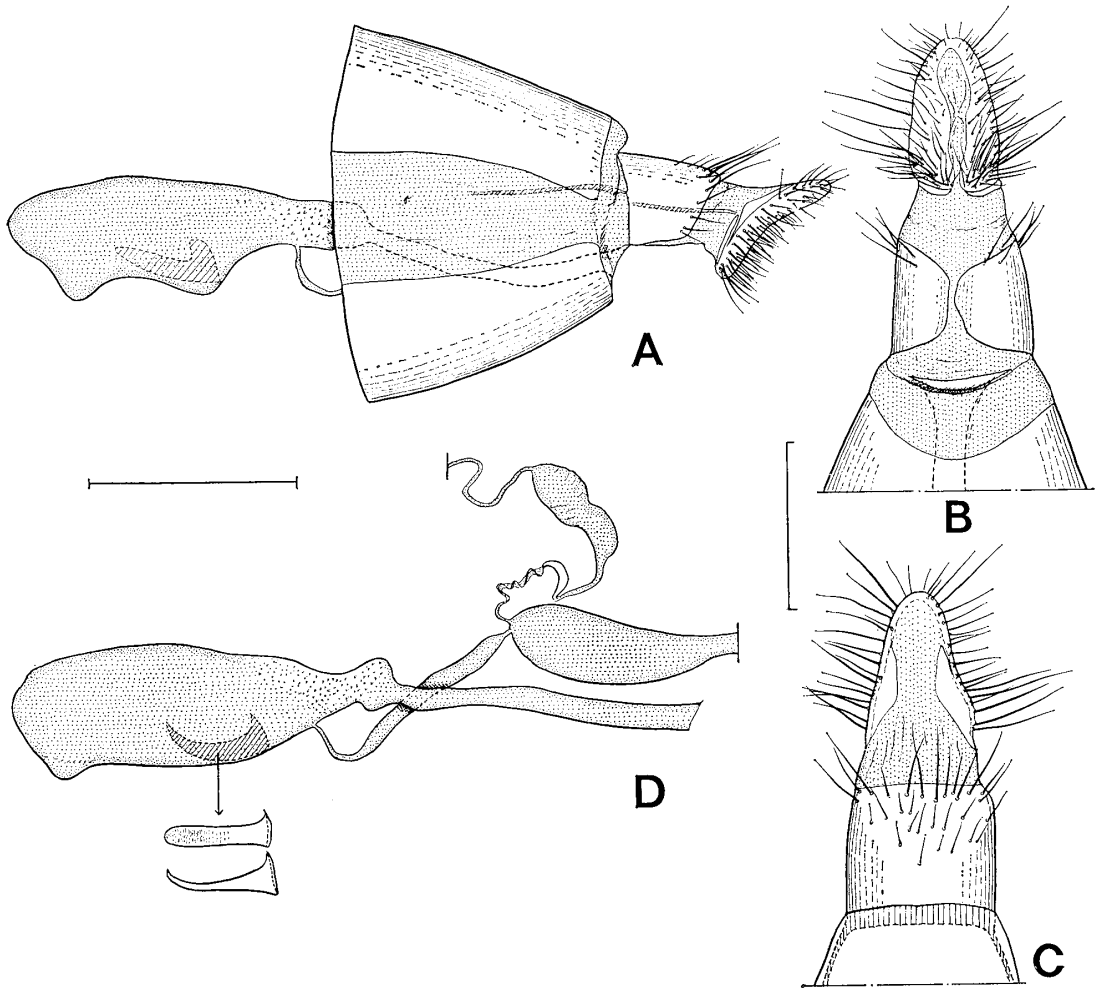

Fig. 3. Female genitalia of *C. aphidivora* sp. nov. A: Lateral view. B: 8th to 10th abdominal segments, ventral view. C: Ditto, dorsal view. D: Bursa and spermatheca. Scale: A, D, 1 mm; B, C, 0.5 mm.

flattened apically. Spermatheca large, without lagena. Eighth tergum short, extending ventrally as to touch at midventral portion, with short setae on dorsal surface at posterior 1/2 and long setae along posterior margin; apophysis anterioris almost 1/2 as long as 7th tergum. Papilla analis rather narrow, with many setae posteriorly; apophysis posterioris shorter than apophysis anterioris.

Forewing length: Male 7.2–7.7 mm, female 8.8–9.1 mm.

Mature larva.

Body length, 13.5 mm; head width, 1.1 mm. Head small and rounded; abdomen broad, especially at 3rd to 6th segments. Pinacula of each segment well developed, dark brown.

Head: Wider than long, evenly dark brown. Colonal suture short, about 2/5 the length of frontal suture. Ocelli 6 in number, I and II larger than the others. Setae dark brown with whitish apex. Seta F1 long, close to frontal suture; AF1 longer than AF2; P1 longest among head setae, just ventral to P2; A2 equidistant from A1 and A3, lying above a line between A1 and A3. O1 long, posteroventral to ocellus I. Labrum small and dark brown; seta La1 long, a little ventral to La2; inner surface

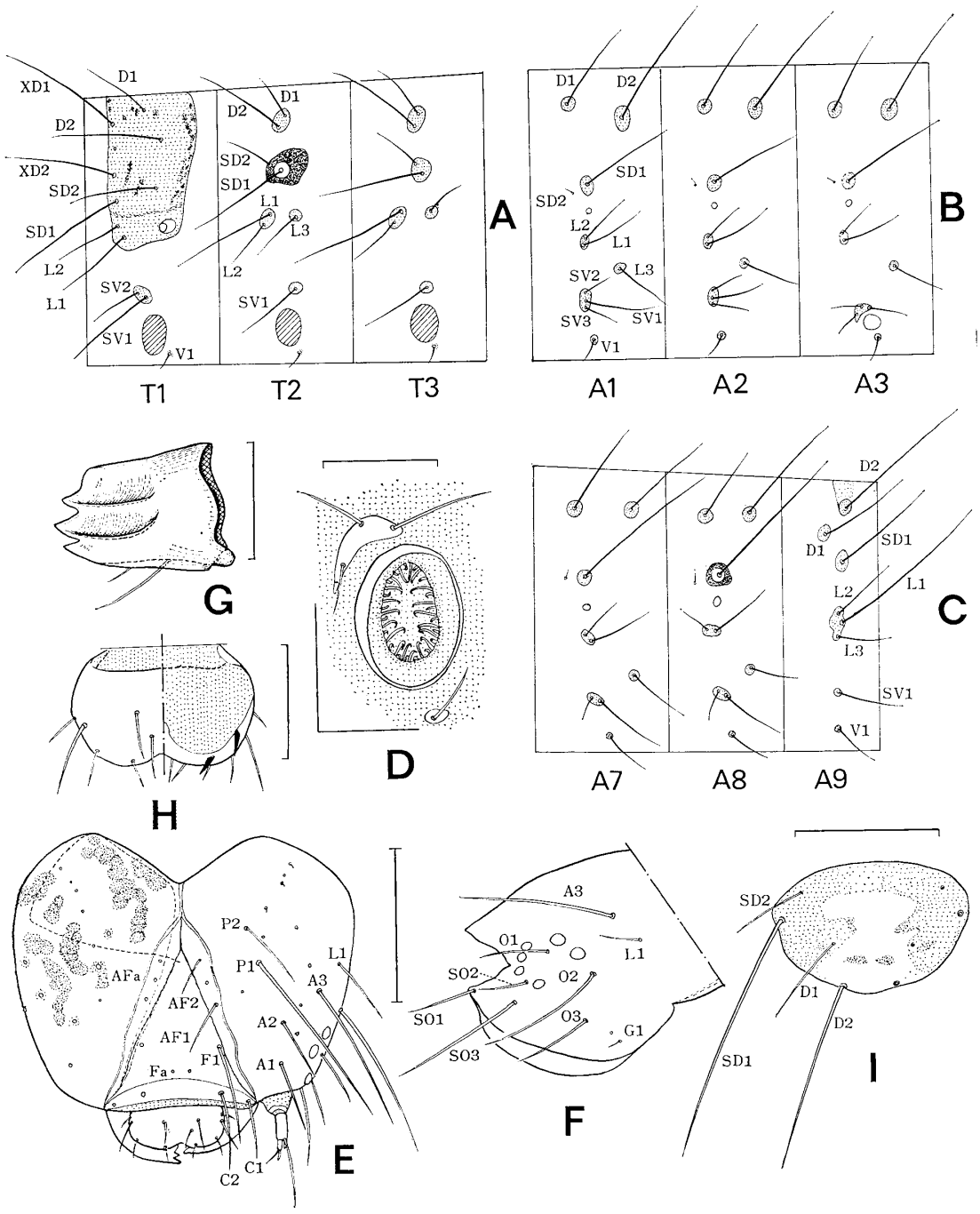

Fig. 4. Larval structures of *C. aphidivora* sp. nov. A: Chaetotaxy, prothorax to metathorax. B: Ditto, 1st to 3rd abdominal segments. C: Ditto, 7th to 9th abdominal segments. D: Left proleg of 3rd abdominal segment. E: Head, frontal view. F: Ditto, lateral view. G: Right mandible, inner view. H: Labrum. I: Anal shield, dorsal view. Scale: D, G, H, 0.2 mm; E, F, I, 0.5 mm.

with two epipharingeal setae. Mandible longer than wide, with 3 teeth; inner teeth abx absent.

Thorax: Integument greyish white. Setae dark brown. Legs well developed, each base not contiguous with the opposite at base. Prothoracic shield broad, al-

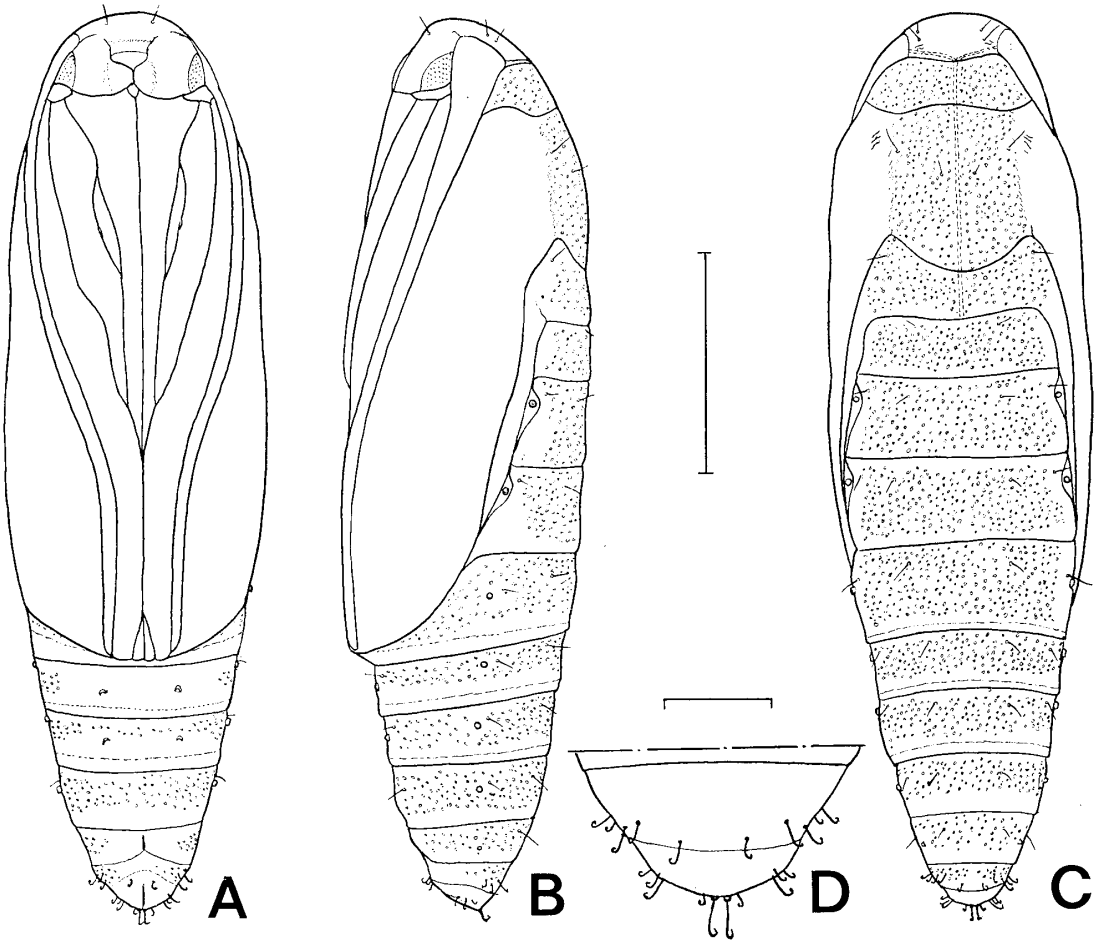

Fig. 5. Pupa of *C. aphidivora* sp. nov. A: Ventral view. B: Lateral view. C: Dorsal view. D: 9th to 10th abdominal segments, dorsal view. Scale: A, B, C, 2 mm; D, 0.5 mm.

most completely fused with a pinaculum of L setae and also including spiracle; setae XD1, XD2 and SD1 long; L1 and L2 shifted transversely. Mesothorax with broad blackish ring surrounding SD2 which is located posteroventral to SD1. Metathorax with setal map as mesothorax.

Abdomen: Prolegs with crockets, biordinal, 40–60 in number. In 1st to 8th segments, setae D1 and D2 almost in horizontal line except in 1st segment where D2 situated a little lateral to D1; SD1 long, and SD2 minute, without pinaculum; L1 and L2 situated in a transverse line except in 8th segment where they are obliquely sifted; SV setae 3 in 1st to 6th segments and 2 in 7th and 8th segments in number. Eighth segment with blackish ring smaller than in mesothorax and spiracle about 1.5 times as large as those of other segments. Ninth segment with pinaculum of D2 fused with that of the opposite side, and forming a broad triangular plate in dorsal view; three L setae in a same pinaculum arranged transversely. Tenth segment with anal shield distinct, D1 and SD2 short, slender, and the others long; anal proleg biordinal with about 30 crochets.

Pupa.

Body length; 7.2–7.3 mm (male), 7.7–8.2 mm (female); width 2.3–2.5 mm (male),

2.6–2.9 mm (female). Body relatively short, evenly brown. Head with frons broadly rounded; vertex without epicranial suture; pilifer not clearly marked; galea extending to 2/3 of forewing and there concealed by midleg sheath; antenna reaching to caudal end of forewing, without lateral dentations; setae F3, P1 and P2 present, fine. Thorax wider than head, with many granule-like punctures on dorsal surface of abdominal segments; foreleg ending a little before caudal end of galea; mid- and hindlegs extending to just caudal to forewing, but hindleg appearing only in apical portion. Abdomen with the same punctures throughout as those on thorax; ventral surface of 5th and 6th segments with proleg scars; 9th and 10th segments with short cremaster hooks, consisting of 5 and 6 pairs, respectively.

Type material: Holotype Male, Higo, Kaseda City, Kagoshima Pref., Kyushu, 2–3, xi. 1981 (reared from larva collected on 21. x. 1981) (K. ÔHARA) (Type No. 219, Kyoto Pref. Univ.). Paratypes; 1♂ 8♀♀, 30. x. 1981 (em.); 3♂♂, 31. x. 1981 (em.); 1♂ 4♀♀, 9. xi. 1981 (em.); 3♂♂ 6♀♀, 18. xi. 1981 (em.), all the same locality and collector as holotype.

Type depository: Holotype is preserved in the collection of the Laboratory of Entomology, Faculty of Agriculture, Kyoto Prefectural University.

Distribution: Japan (Kyushu)[4].

Remarks: The new species is led to belong to *Cryptoblabes* by the wing venation, and the structures of the female genitalia and the larvae, but the species also resembles *Thiallela* species by having the separate condition of veins M_2 and M_3 in both wings and the slender antennal base in the male. The present new species is tentatively placed here in *Cryptoblabes* and the generic status will be reviewed after finishing taxonomic study of the related genera in the future. This new species can be easily distinguished from the known species of *Cryptoblabes* by the slender antennal base in the male, and the absence of both special scales and a peculiar projection from the valva in the male genitalia.

Biological notes: The larvae of this new species live in silken runways on the surface of the culm of bamboo where *Pseudoregma bambucicola* are densely colonized. Several larvae were often found in a runway. The pupation takes place in thick cocoon in the runways or in the space between the surface of the culm and the old stipules. Annual life cycle of this new species is not clarified in detail. The junior author observed all the stages including adults besides the prey aphids from the late October to the early November, 1981. In January 1982, the aphid populations decreased, and only the pupae of the moth were found. The pupae were still recognized in February but they all emerged untill April. Since then no aphid colony was observed until mid-summer. The aphids usually increase from early autumn. It is uncertain at present whether this new phycitine species always feeds on *Pseudoregma bambucicola* or not from these limited observations.

[4] Recently AOKI *et al.* (1981) reported a species of pyralid larvae associated with *Pseudoregma alexanderi* (TAKAHASHI), from Taiwan, whose habit of the larvae resembles that of the present new species. After the examination of the young larval specimens which Dr. AOKI kindly sent to the senior author, it belongs to the Phycitinae and is probably conspecific with the new species. But the decision is deferred here to the discovery of the adult from Taiwan.

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摘　　要

日本産食蚜性マダラメイガの1新種（吉安　裕・大原賢二）

メイガ科幼虫の多くは植食性であるが，一部肉食性の種がいることが報告されている．マダラメイガ亜科では，*Laetilia coccidivora* (COMSTOCK) が，カイガラムシ科の *Lacanium* 属などの昆虫を捕食する (SIMANTON, 1916) ほか，*Phycita dentilinella* HAMPSON が，他の鱗翅類の蛹を (AYYAR, 1929)，*Euzophera cocciphaga* HAMPSON が，カイガラムシ科の *Aspidoproctus xyliae* の卵と若令幼虫を (AYYAR, 1929)，*Cereobata coccophthora* TURNER が同じくカイガラムシ科の *Eriococcus* 属を (CLAUSEN, 1940) それぞれ捕食することが報告されている．また，本来植食性の *Cryptoblabes gnidiella* (MILLIERE) は Malaya ではキジラミ科の *Aleurocanthus* 属を捕食することがわかっている (CLAUSEN, 1940; HEINLICH, 1956)．LOPEZ (1930) 及び RUEDA と CALILUNG (1974) は，フィリピンにいる *Thialella* sp. が，サトウキビの害虫，*Ceratovacuna* (=*Oregma*) *lanigera* (ZEHNTNER) の天敵であることを報告している．アブラムシを捕食するマダラメイガとしてはこれが唯一の記録である．

筆者の一人，大原は，鹿児島県加世田市で，ホウライチク (*Bambusa nana* var. *nominalis* MAKINO) につくタケツノアブラムシ (*Pseudoregma bambucicola* TAKAHASHI) を捕食しているメイガ科幼虫を発見し，室内で蛹化・羽化させた．これらの標本を調べた結果，以下に述べる特徴から，マダラメイガ亜科の *Cryptoblabes* 属の新種であることが判明したので，その記載と簡単な生活史の記述を行った．

成虫は翅がやや細長く，灰白色の前翅前縁部を除き，淡い灰褐色である．前翅には小さな点刻状の条斑を有する．前後翅とも M_2 脈と M_3 脈は基部で融合することなく離れている．雄の触角は，他の *Cryptoblabes* 属の種と異なり基部に角状突起をもたない．雄交尾器では，本属の特徴になる uncus

先端の二叉状態が認められ，同様に雌でも corpus bursae に大きな1本の signum がある．幼虫でも *Cryptoblabes* 属特有の前胸背楯の発達がみられ，側域に拡がってL刺毛群及び気門がこの中に含まれる．

本種幼虫は，ホウライチクの稈の部分に密生しているタケツノアブラムシのコロニー内に細長い，糸で綴った巣を作り，内部におり，時に巣外に出てアブラムシを捕食する．秋期には老熟幼虫は巣の内部や，タケの稈と古い托葉との間等に入り込み，厚い繭を綴ぎ蛹化，そのまま越冬に入ると思われる．これらの蛹は2月には羽化していなかったが，4月中旬にはすべて羽化していた．そのころから夏期にかけては，タケツノアブラムシの個体群はほとんど見られなくなり，本種も発見出来なかった．タケツノアブラムシは通常秋期から翌年の春先にかけては多数の個体が見られるが，夏期にはほとんどいなくなるため，本種が常にタケツノアブラムシを食餌としているかどうかは不明である．

本種は，上で挙げた，翅脈，雌雄交尾器，幼虫の前胸背楯などの形態から *Cryptoblabes* 属に入れたが，東洋区に分布する *Thialella* 属も類似した翅脈と雄の触角を有する．今のところ，*Thialella* 属の成虫交尾器や，幼虫の特徴がはっきりしていないので，本種の所属についてはこの2属の研究が終わった段階で再検討する必要があると思われる．